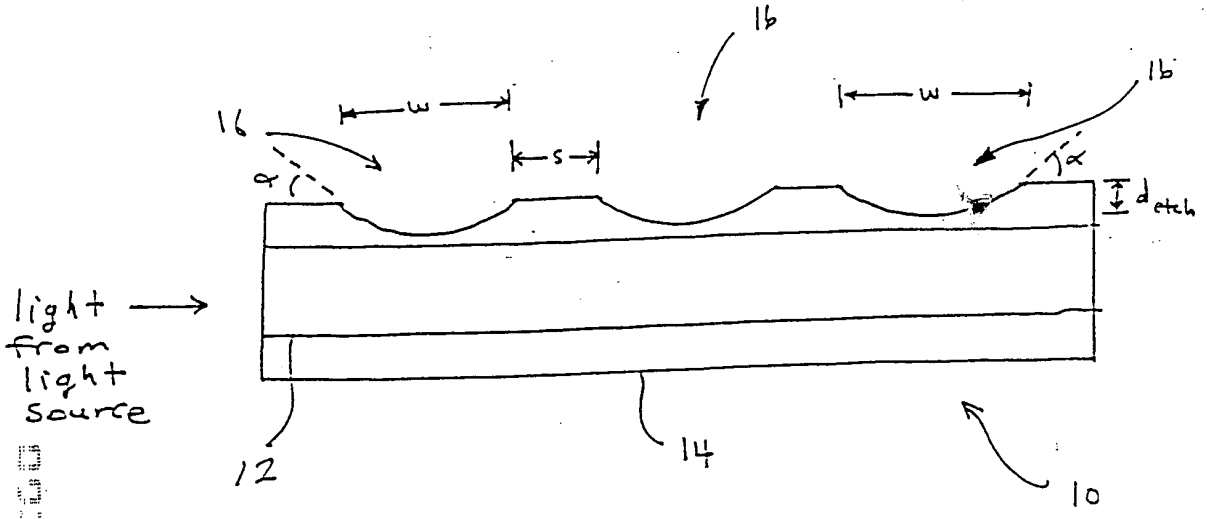


Fig. 1A

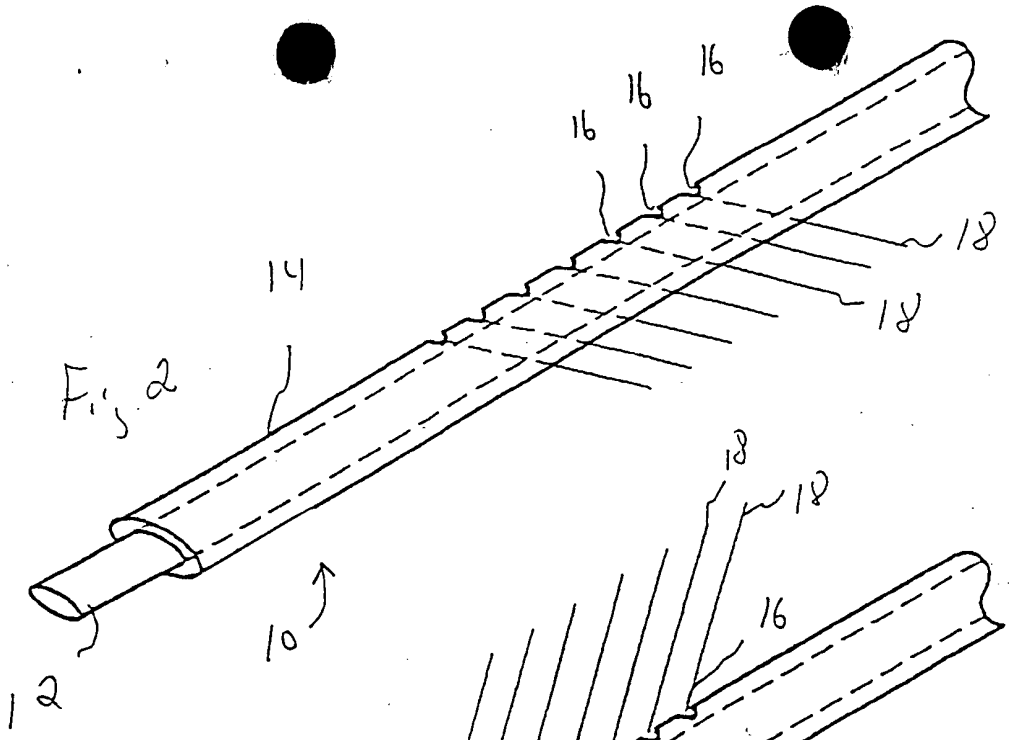


Fig. 2

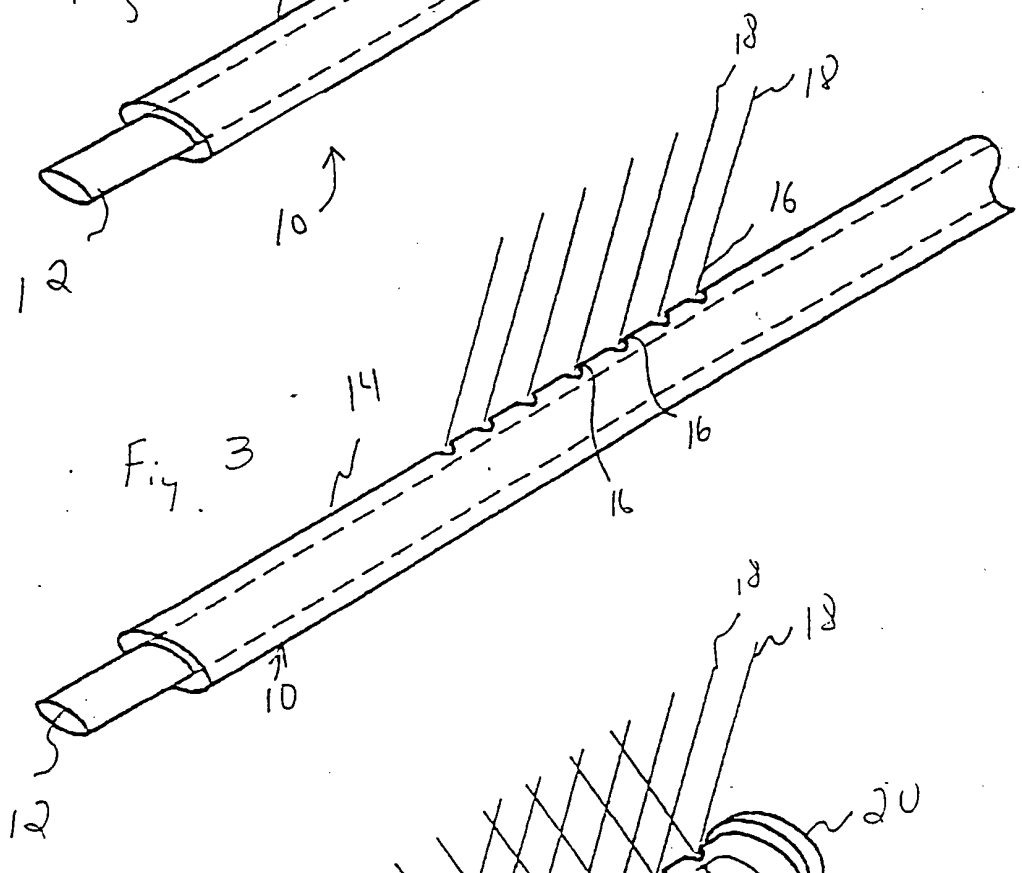


Fig. 3

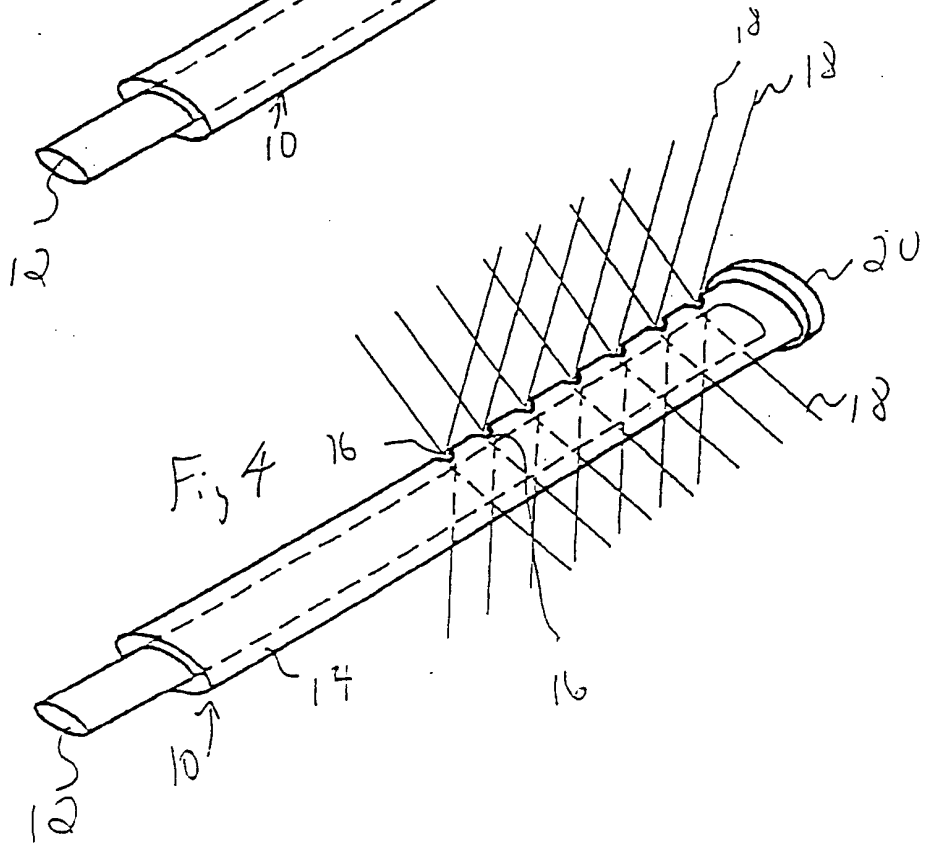


Fig. 4

Fig. 5A

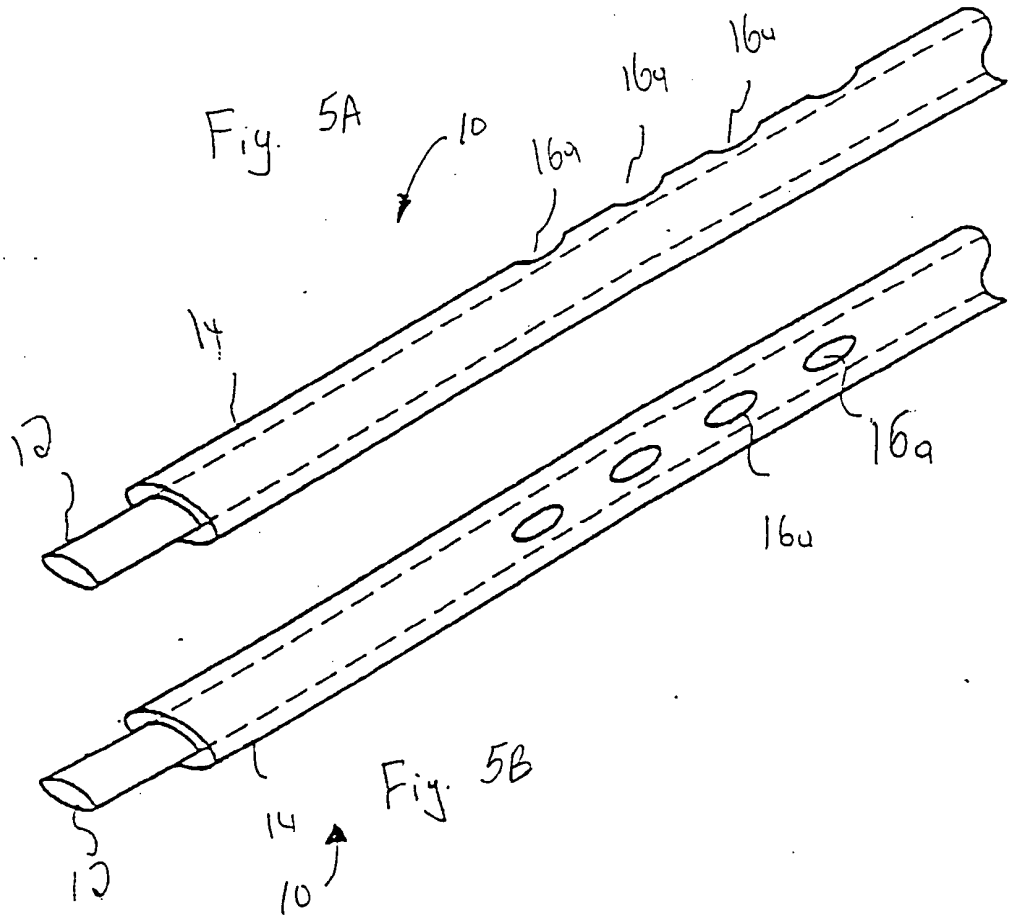


Fig. 5B

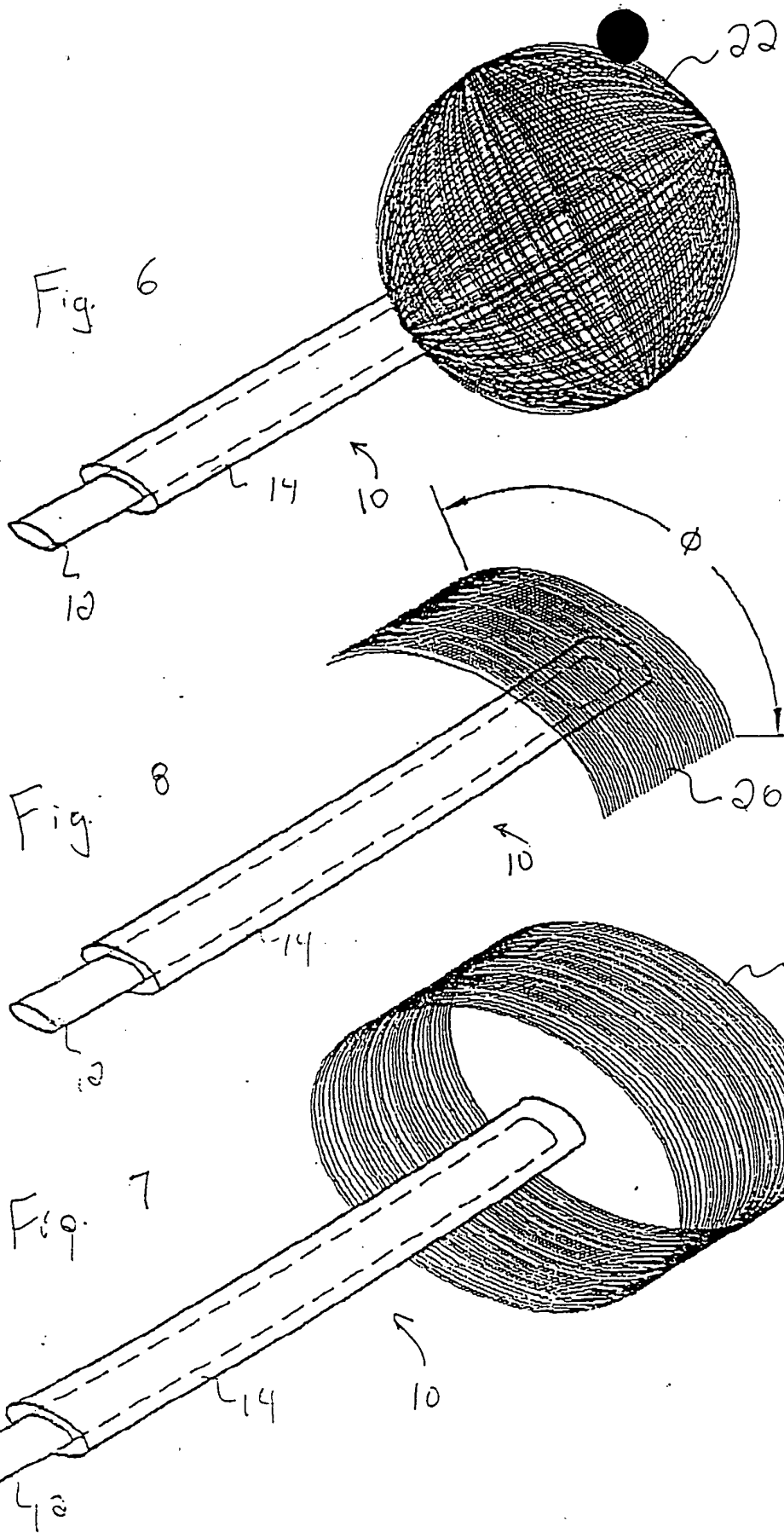
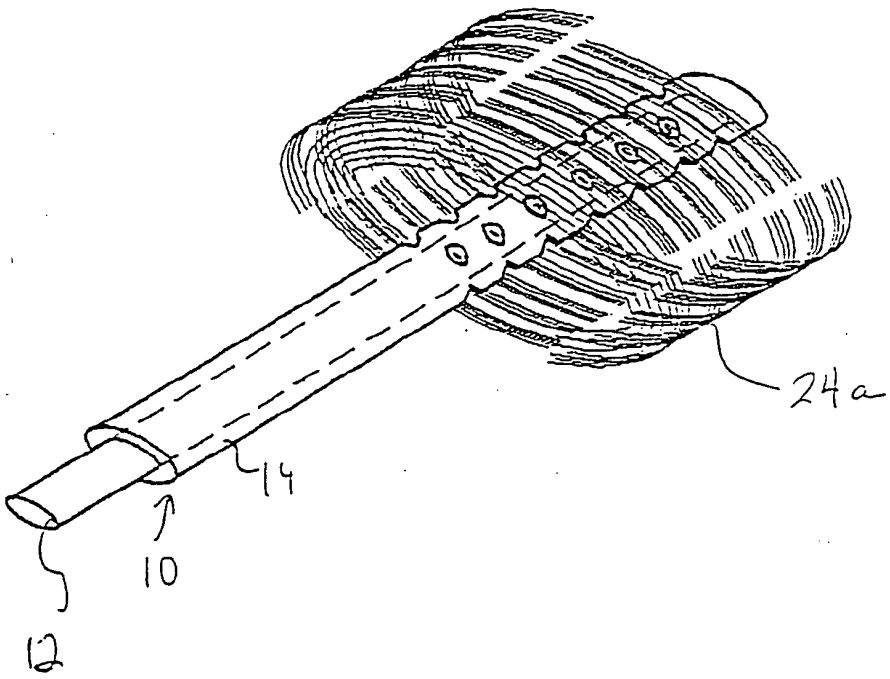


Fig. 6

Fig. 8

Fig. 7

Fig. 9



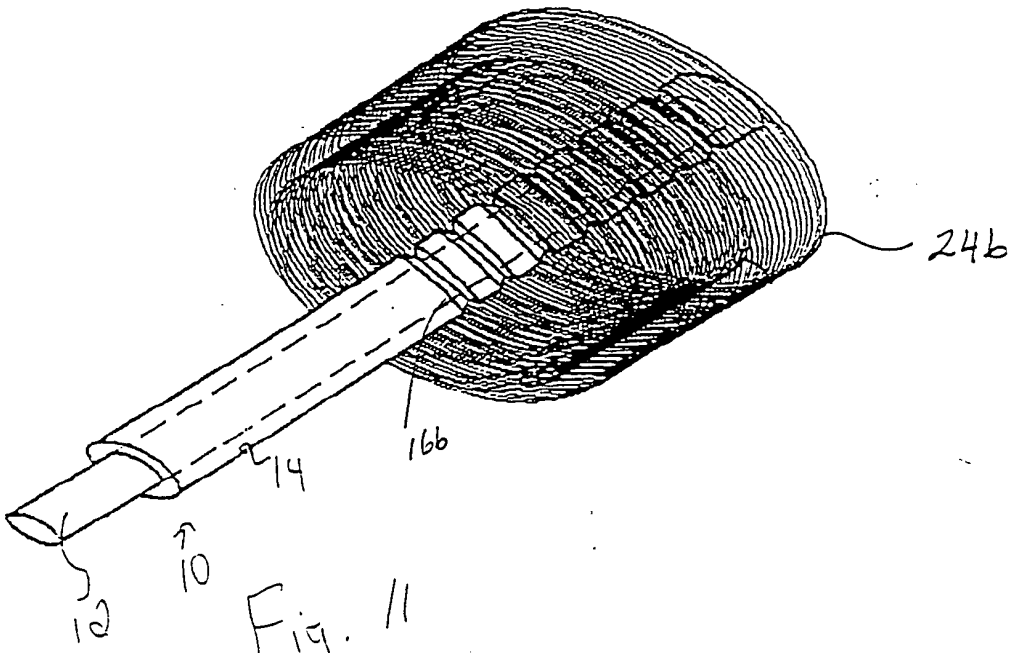


Fig. 11

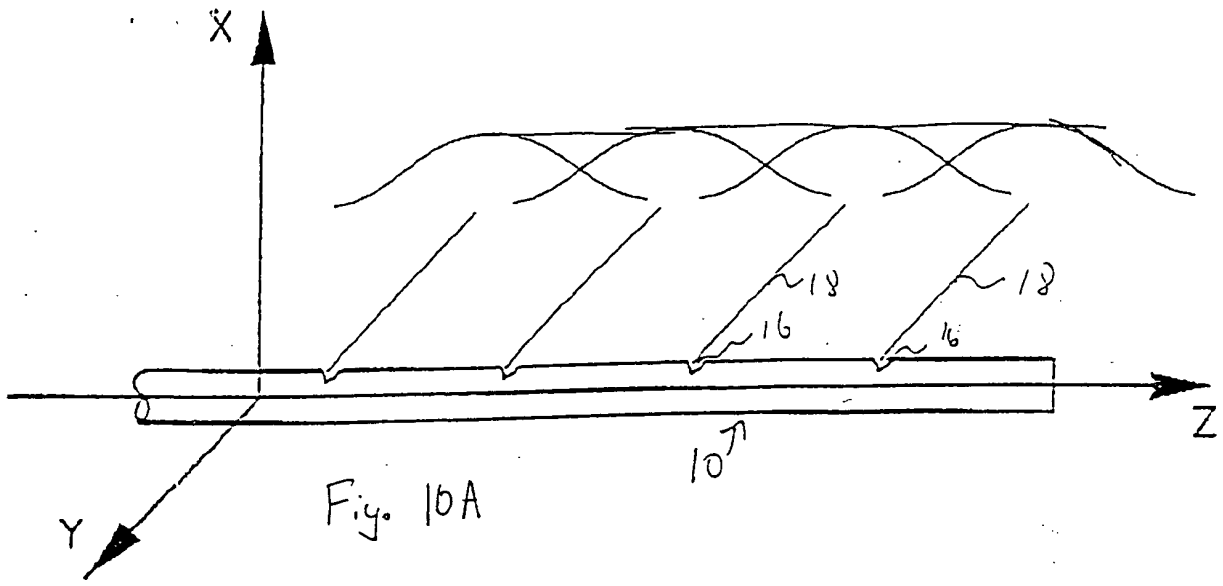


Fig. 10A

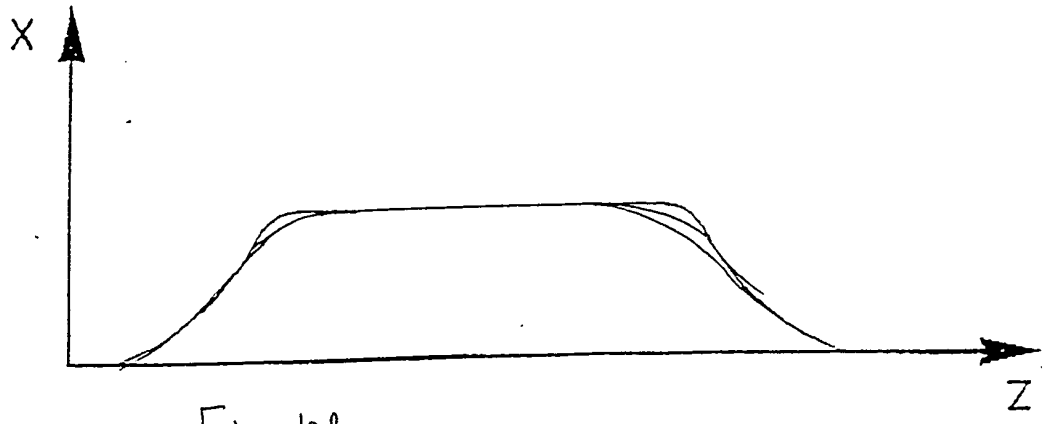


Fig. 10B

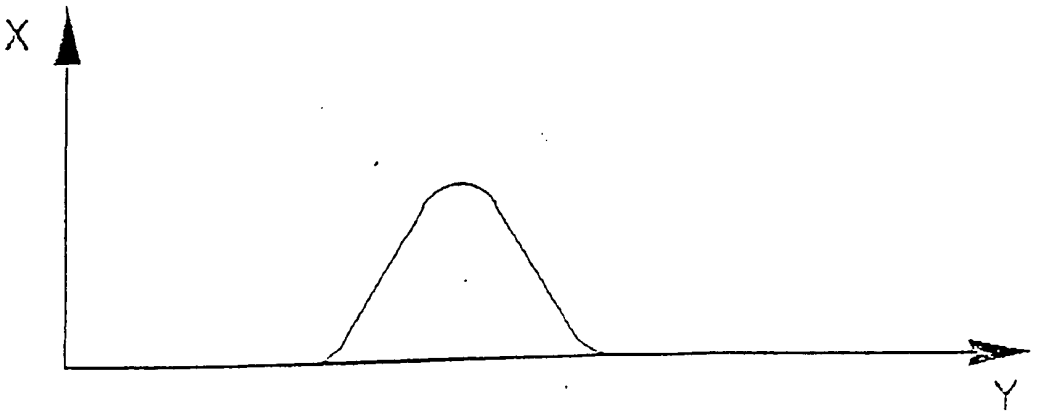


Fig. 10C

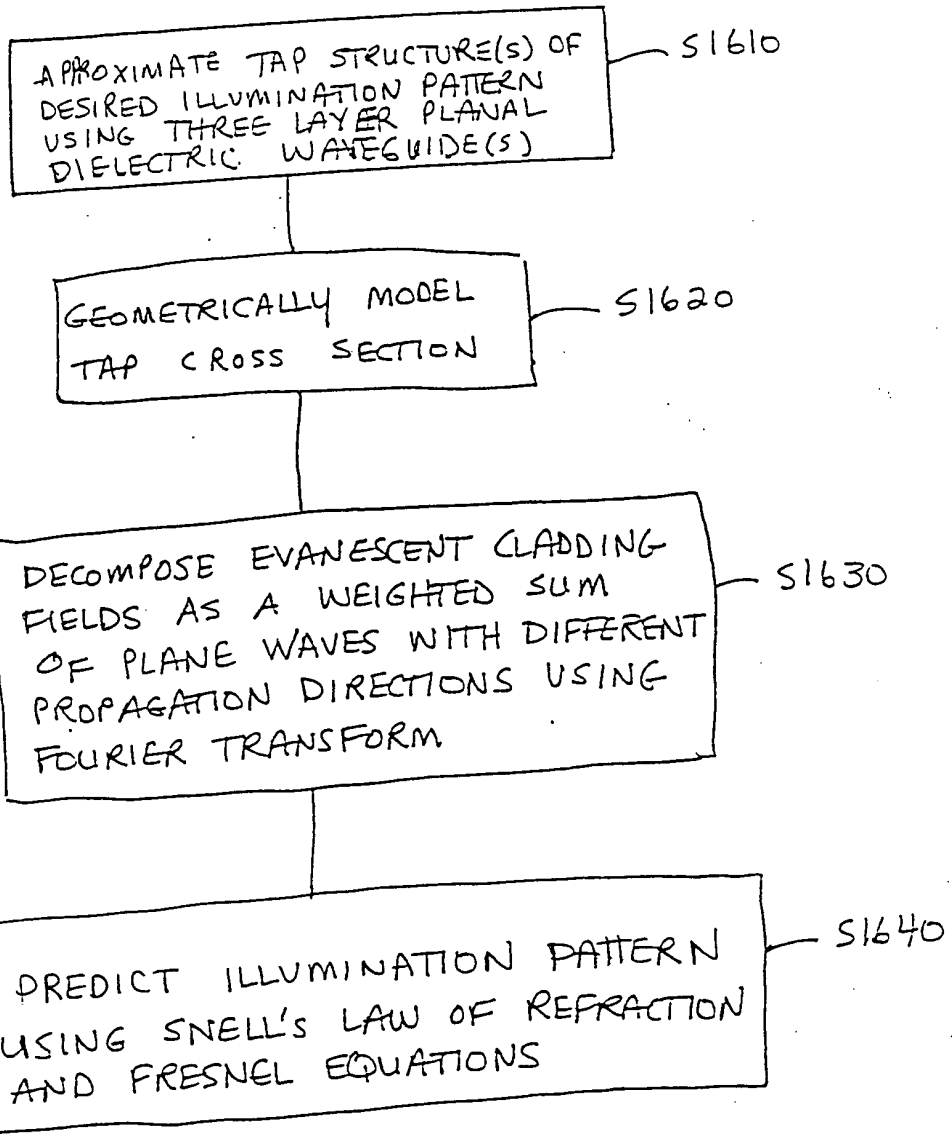

APPROXIMATE TAP STRUCTURE(S) OF DESIRED ILLUMINATION PATTERN USING THREE LAYER PLANAL DIELECTRIC WAVEGUIDE(S)
S1610
GEOMETRICALLY MODEL TAP CROSS SECTION
S1620
DECOMPOSE EVANESCENT CLADDING FIELDS AS A WEIGHTED SUM OF PLANE WAVES WITH DIFFERENT PROPAGATION DIRECTIONS USING FOURIER TRANSFORM
S1630
PREDICT ILLUMINATION PATTERN USING SNELL'S LAW OF REFRACTION AND FRESNEL EQUATIONS
S1640

Figure 12A

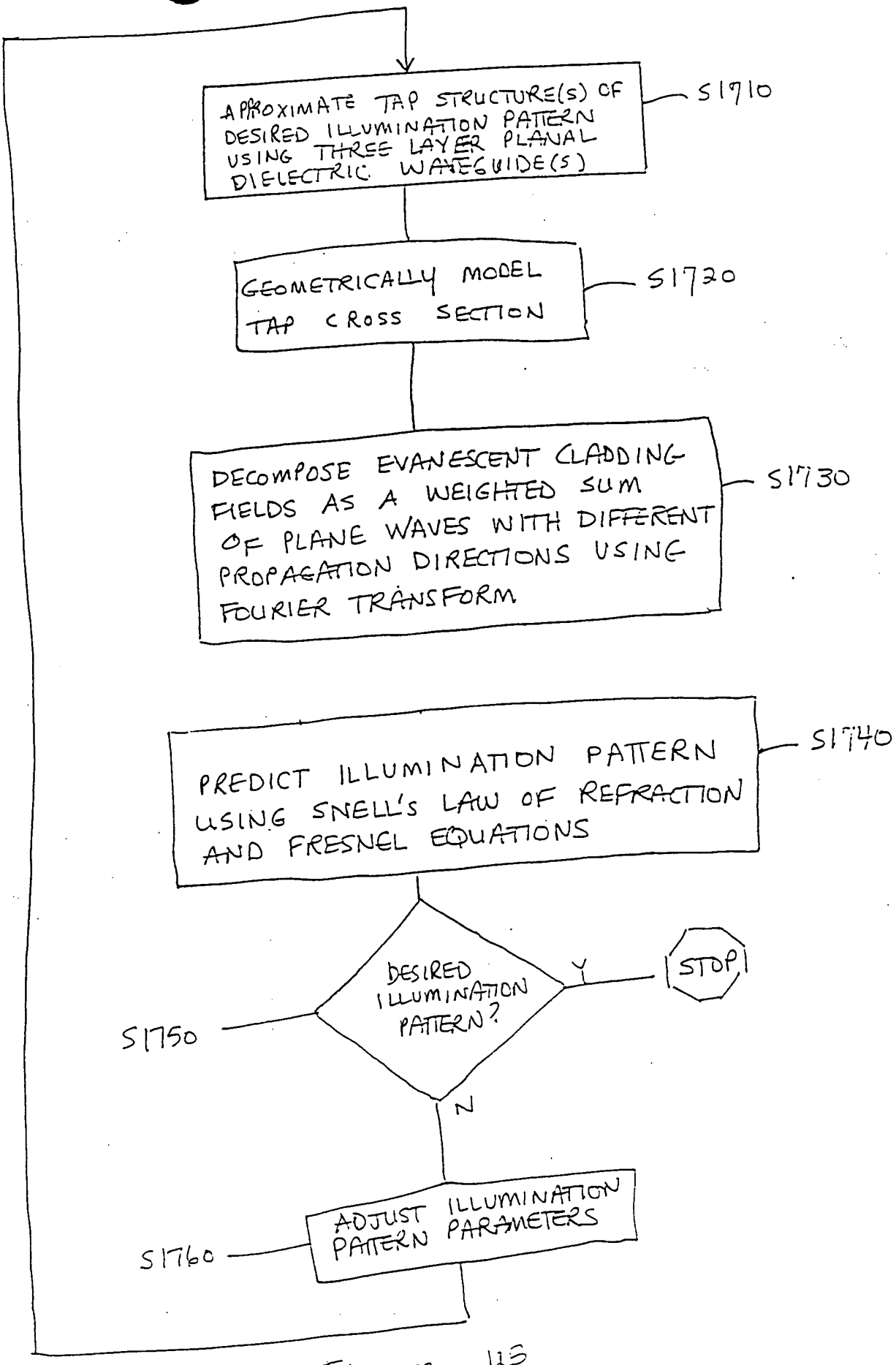

APPROXIMATE TAP STRUCTURE(S) OF DESIRED ILLUMINATION PATTERN USING THREE LAYER PLANAL DIELECTRIC WAVEGUIDE(S)
S1710
GEOMETRICALLY MODEL TAP CROSS SECTION
S1720
DECOMPOSE EVANESCENT CLADDING FIELDS AS A WEIGHTED SUM OF PLANE WAVES WITH DIFFERENT PROPAGATION DIRECTIONS USING FOURIER TRANSFORM
S1730
PREDICT ILLUMINATION PATTERN USING SNELL'S LAW OF REFRACTION AND FRESNEL EQUATIONS
S1740
DESIRED ILLUMINATION PATTERN?
S1750
Y
STOP
N
ADJUST ILLUMINATION PATTERN PARAMETERS
S1760

Figure 125

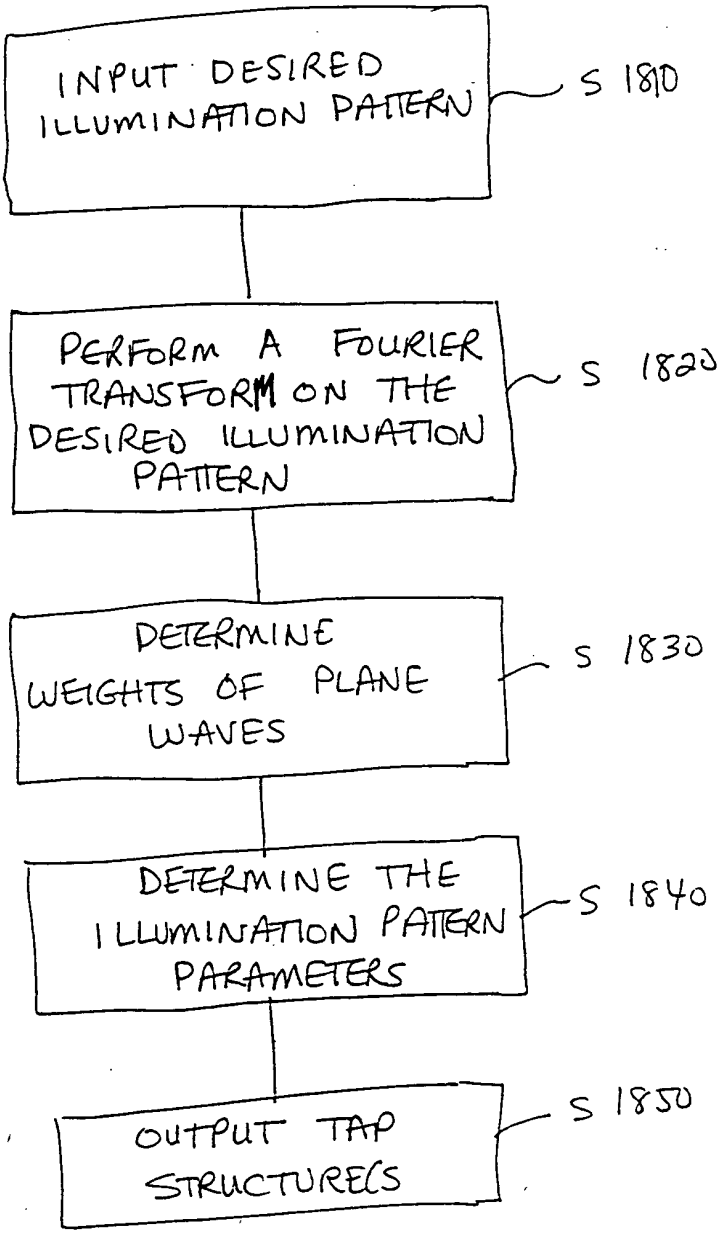

INPUT DESIRED ILLUMINATION PATTERN
S 1810
PERFORM A FOURIER TRANSFORM ON THE DESIRED ILLUMINATION PATTERN
S 1820
DETERMINE WEIGHTS OF PLANE WAVES
S 1830
DETERMINE THE ILLUMINATION PATTERN PARAMETERS
S 1840
OUTPUT TAP STRUCTURES
S 1850

Figure 12C

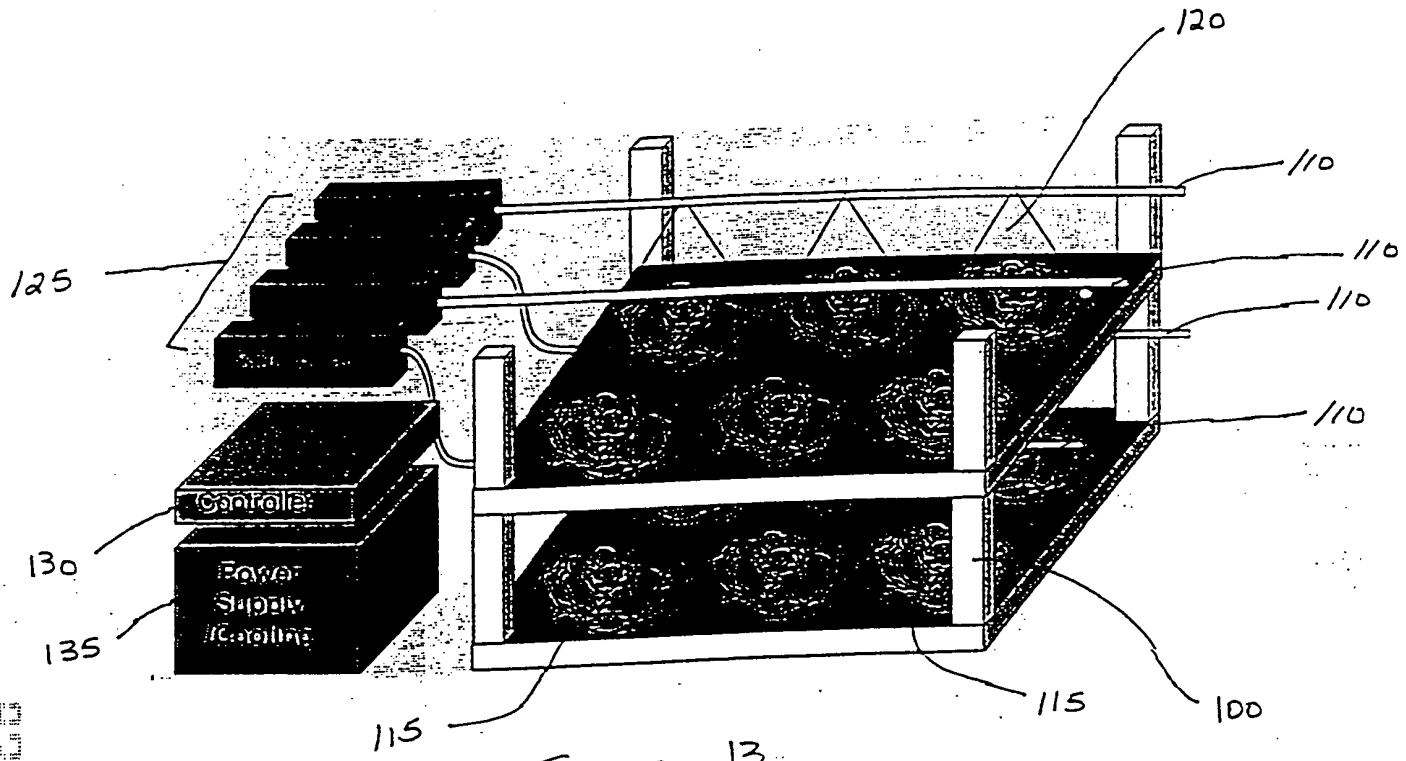


Figure 13

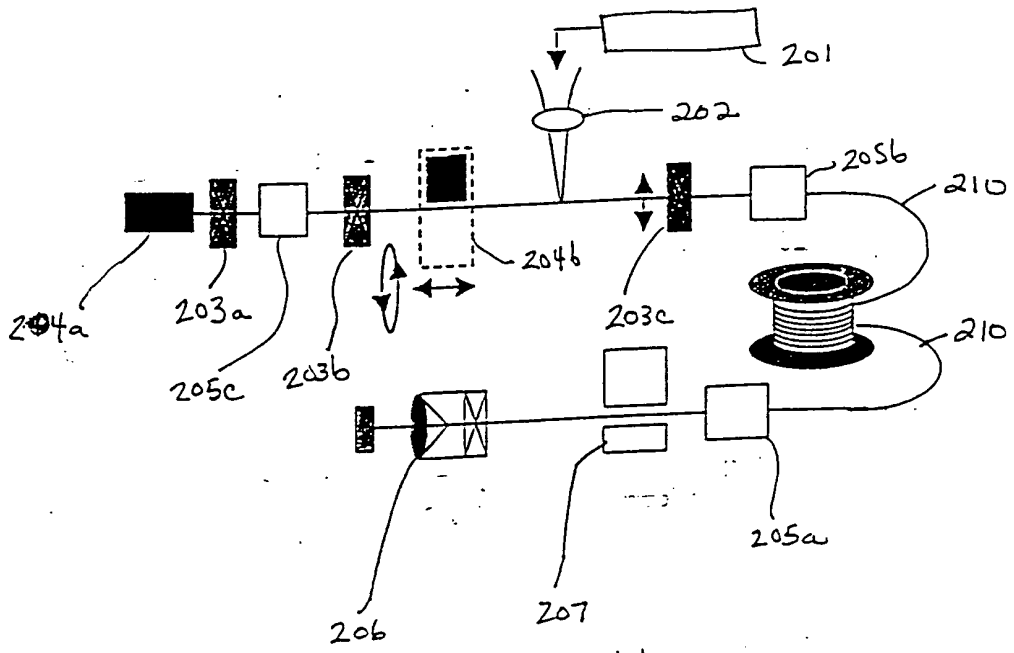


Figure 14

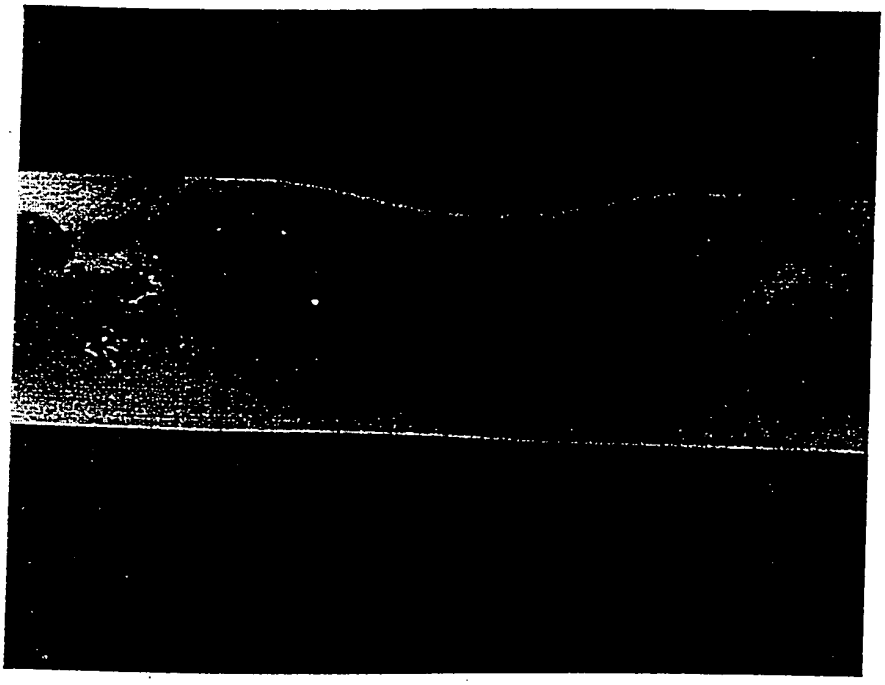


Figure 14A

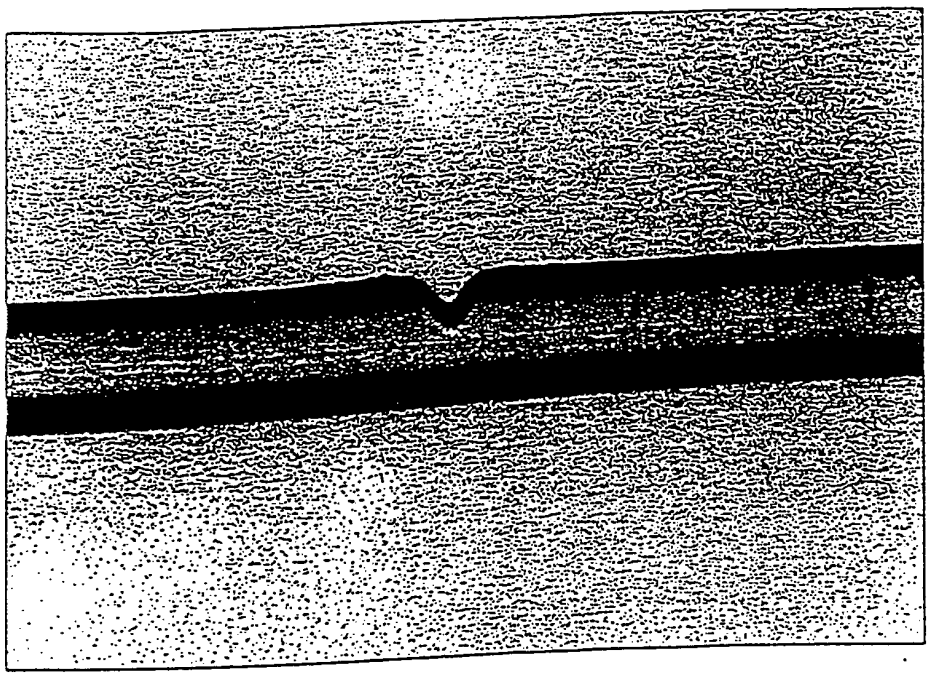


Figure 15

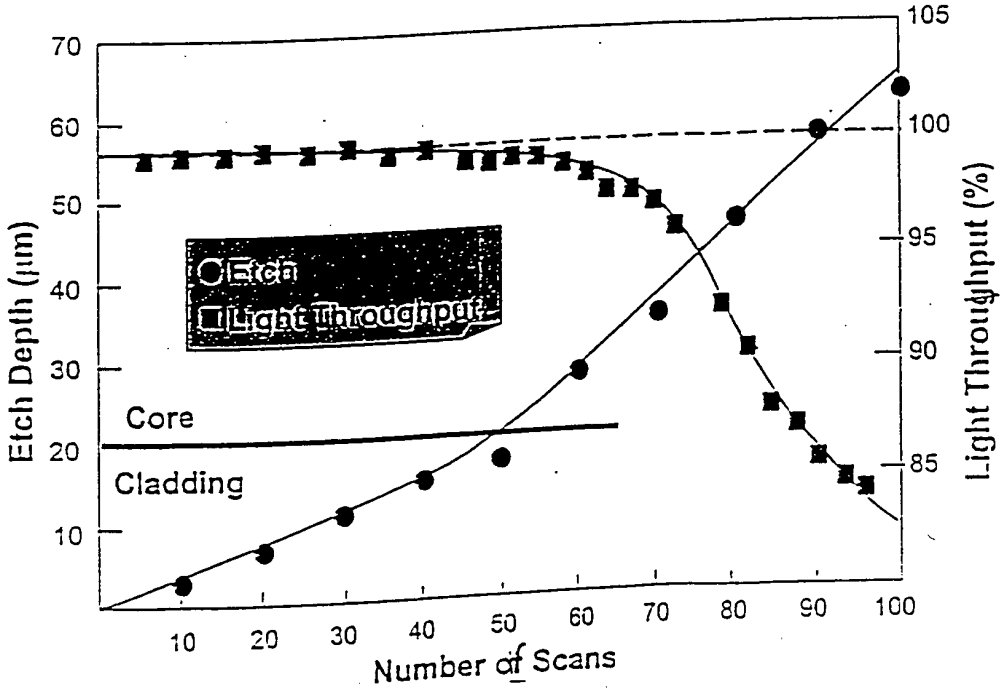


Figure 16

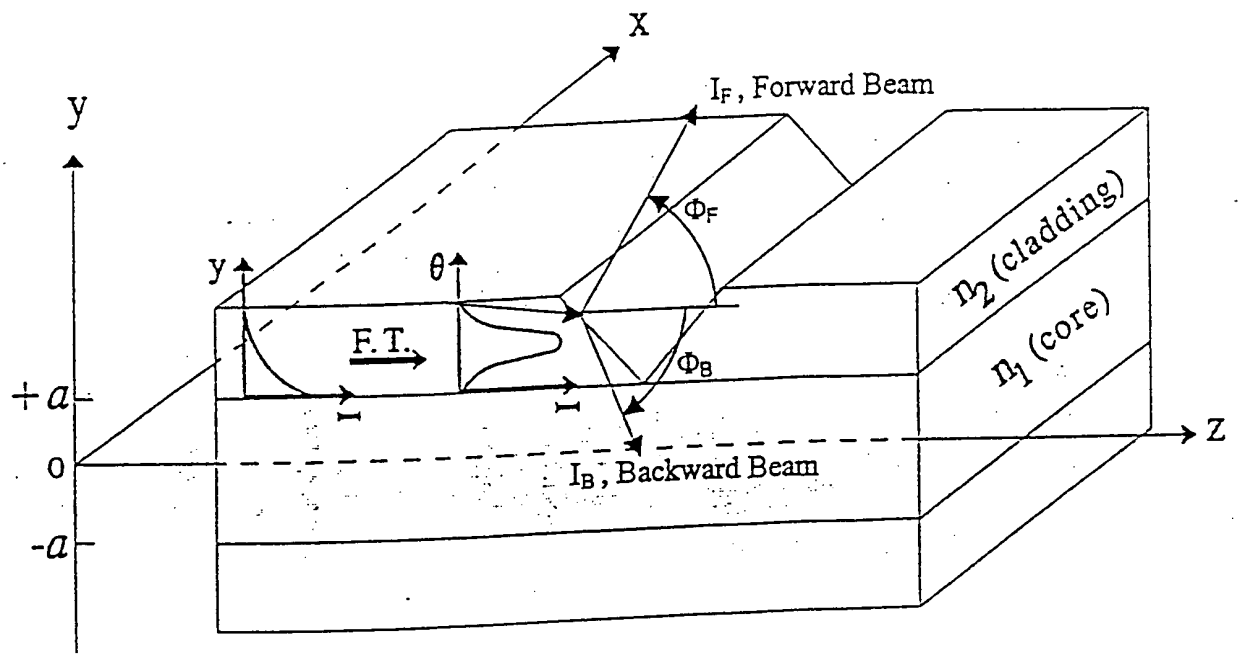


Figure 17

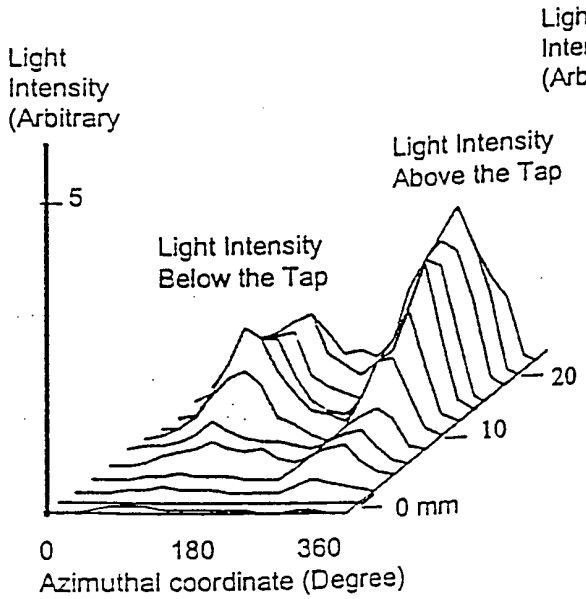


Figure 18A

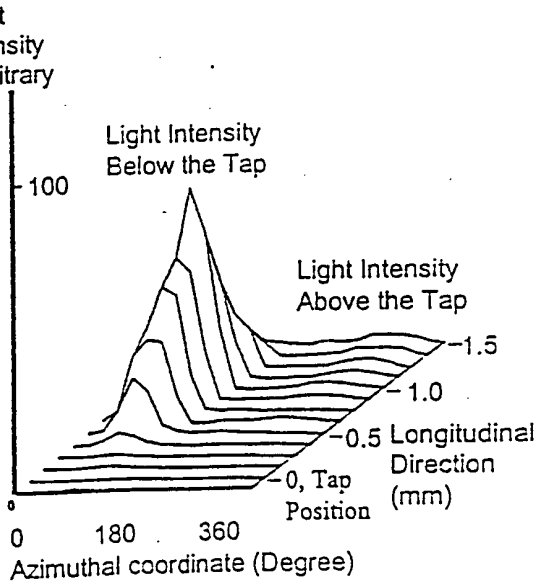


Figure 18B

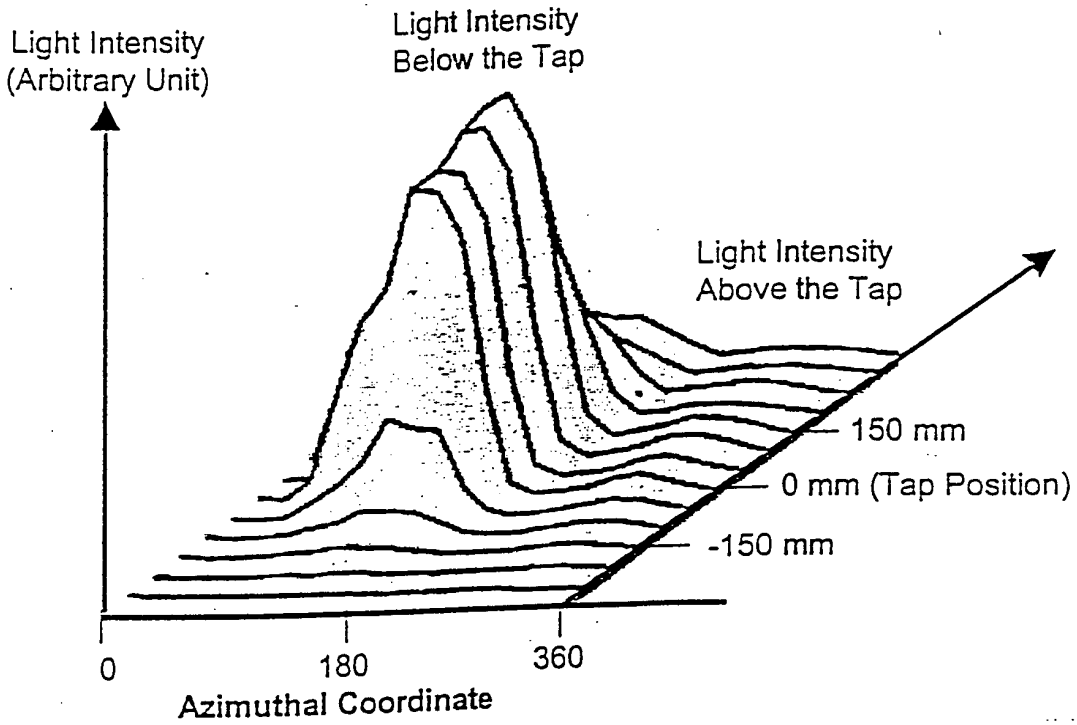


Figure 19

Tap Angle (α)	Polarization	Φ_B	Φ_F	I_B/I_{total} (%)	I_F/I_{total} (%)
10° (Multimode fiber)	s (Theory) p(Theory) random (Experimental)	20.5° 17.1° 17°	10.5° 10.5° 15°	54.3 54.4 48.4	45.7 45.6 51.6
35° (Multimode fiber)	s (Theory) p(Theory) random (Experimental)	60.1° 60.1° 60°	17.8° 16.3° ~ 0	95.7 96.5 92.6	4.3 3.5 7.4
50° (Single mode fiber)	s (Theory) p(Theory) random (Experimental)	98° 95° 84°	~ 0 ~ 0 ~ 0	89.9 86.7 91.0	10.1 13.3 9.0

Figure 22

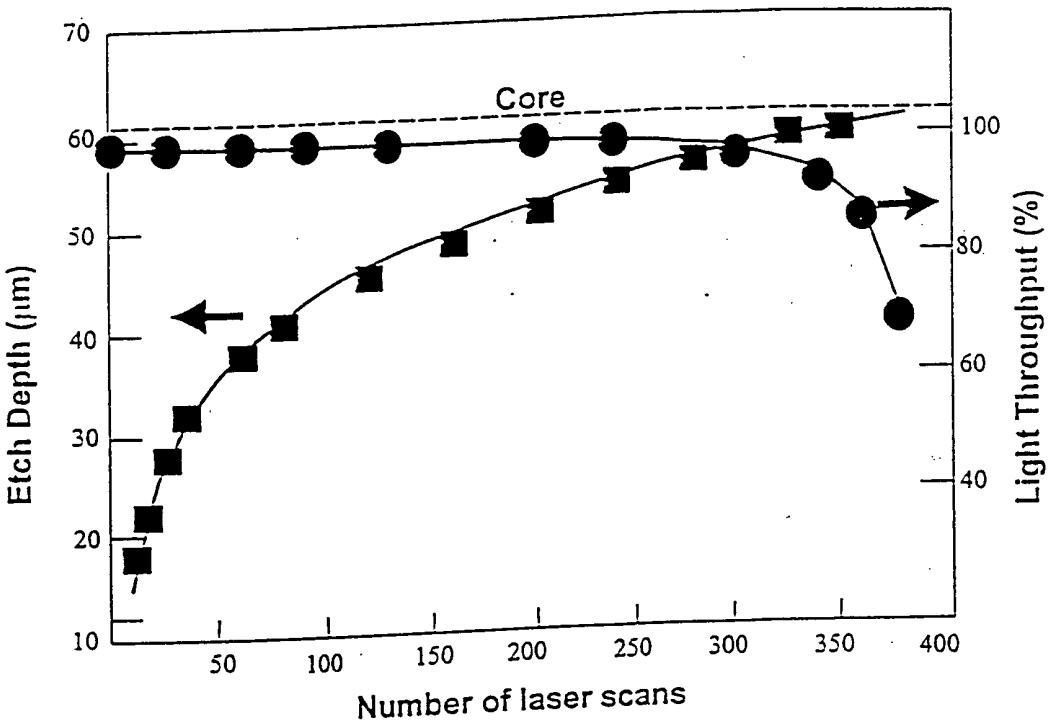


Figure 20

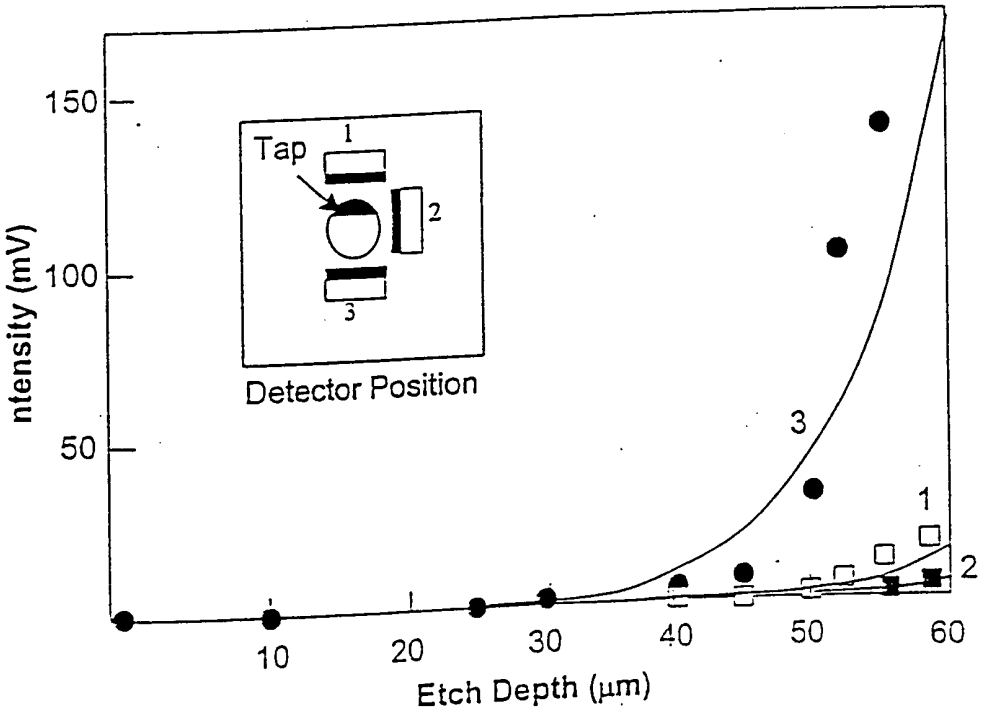


Figure 21

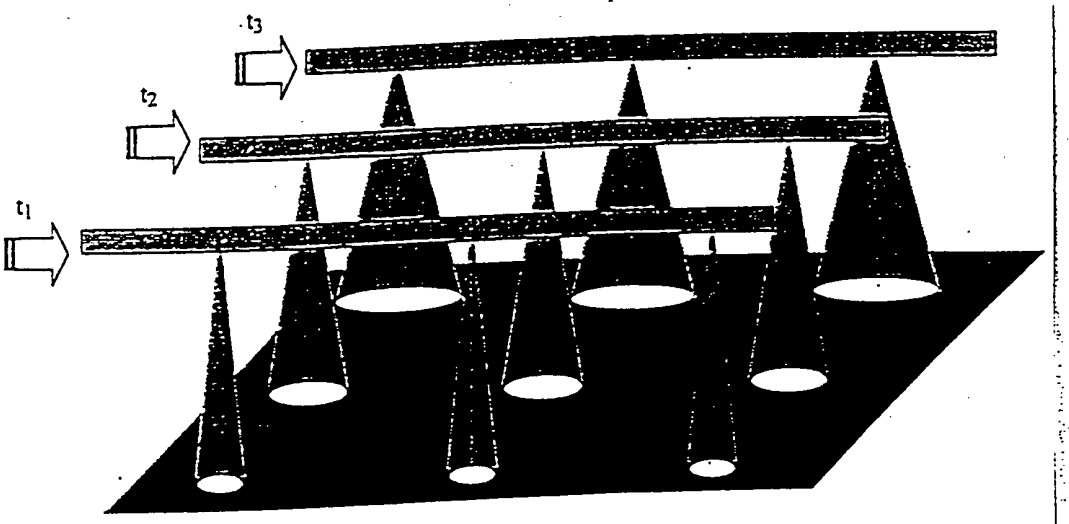


Figure 23

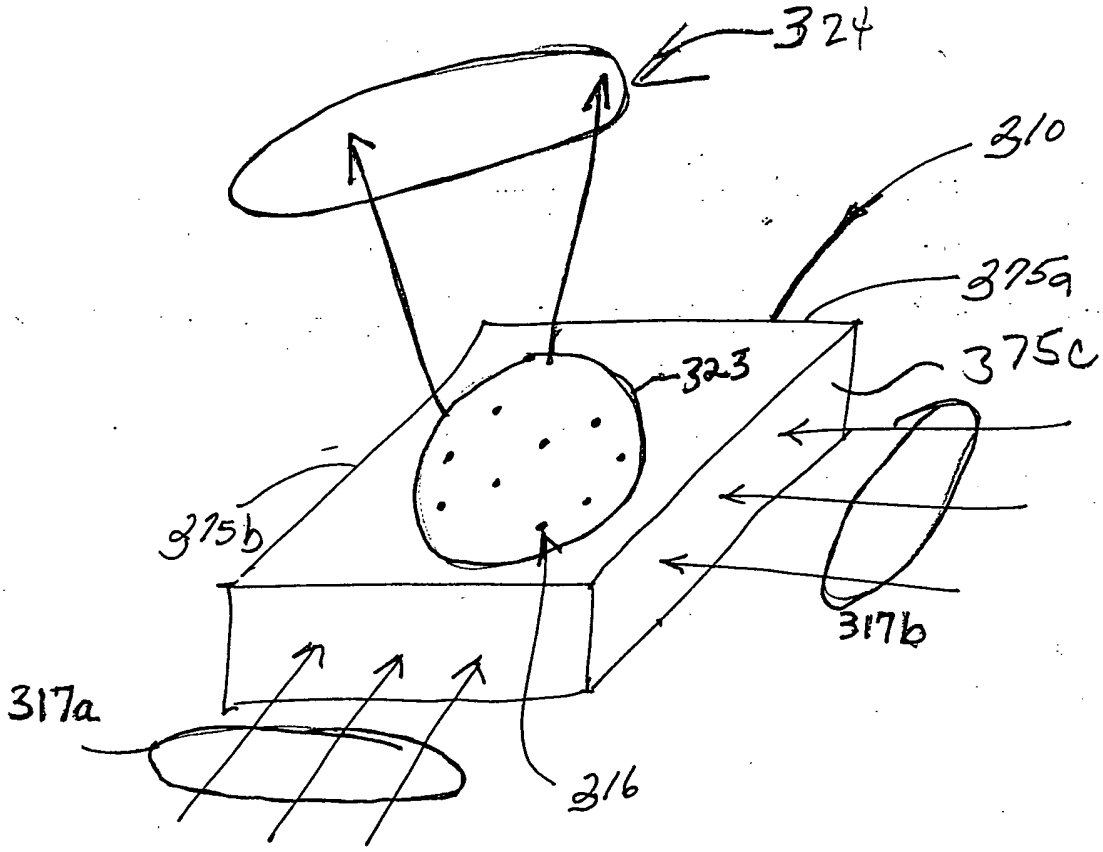


Fig. 24